

## Calendar

### Wednesday, November 15

**11:00 a.m.** Fermilab ILC R&D Meeting - 1 West

Speaker: M. Demarteau, Fermilab

Title: Review of ILC Detector Events and Actions at the Valencia GDE/ECFA Meeting

**3:30 p.m.** Director's Coffee Break - 2nd floor crossover

**4:00 p.m.** Fermilab Colloquium - 1 West

Speaker: P. Sikivie, University of Florida

Title: The Search for Axion Dark Matter

### Thursday, November 16

**12:30 p.m.** Special Particle Astrophysics Seminar - Dark Side WH-6NW (note date and location)

Speaker: P. Oh, University of California, San Diego

Title: New Views of the High-Redshift Universe

**1:00 p.m.** ALCPG ILC Physics and Detector Seminar - Hornet's Nest WH-8XO

Speaker: R. Abrams, Indiana University

Title: ILC Muon Detector Prototype Testing at Fermilab

**2:30 p.m.** Theoretical Physics Seminar - WH-3NW (note location)

Speaker: R. Kitano, Stanford Linear Accelerator Center

Title: Dynamical GUT Breaking and m-Term Driven SUSY Breaking

**3:30 p.m.** Director's Coffee Break - 2nd Flr X-Over

**4:00 p.m.** Accelerator Physics and Technology Seminar - 1 West

Speaker: T. Anderson, Fermilab

Title: Accelerator Vacuum 101 Made Easy

## Galaxy in far-away universe offers a glimpse of the past



The blue arc is 11 billion light years away.

It was 8 O'clock on a night in April, and astrophysicist Sahar Allam was sifting through images of galaxies when she came across something surprising. One picture showed a round orange object with a bright blue arc formation above it.

The shapes and colors indicated an unusual phenomenon called "gravitational lensing." Lensing is like a natural telescope; it happens when the gravity from a nearby object bends and concentrates distant light. The blue galaxy was probably far away--it was likely lensed by the closer orange galaxy. "I was so excited that I named it the 8 O'clock arc," she said.

Allam recruited colleagues Huan Lin, Douglas Tucker, Jim Annis, Tom Diehl, Josh Frieman and Liz Buckley-Geer to help gather more data to find out how far away the arc-shaped galaxy really was. The group waited until late summer, when the orange galaxy and blue arc would be easily visible in the night sky.

## From the Particle Physics Division

### A model for ILC to emulate

*Today's column is written by Particle Physics Division Head Jim Strait.*



In September, I had the honor of serving on a Department of Energy review of the U.S. contributions to ITER, a major international R&D project that aims to demonstrate the scientific and technical feasibility of harnessing fusion, the process that powers the sun, as a source of energy. This is a project of a scale comparable to the ILC, in terms of complexity, technical challenge, and cost. It will be built by an international consortium of the European Union, Japan, the People's Republic of China, India, the Republic of Korea, the Russian Federation and the United States of America, a similar set of parties to the one we expect to be involved in the construction of the ILC.

After many years of R&D and engineering design, and an extended period of international negotiations, the ITER project is on the verge of being launched. The site chosen by the international community is in Cadarache in Southern France, with a second major center in Japan. Next week, the International Agreement that will bring

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## Weather



Patchy Fog **45°/35°**

[Extended Forecast](#)

[Weather at Fermilab](#)

## Current Security Status

[Secon Level 3](#)

## Wilson Hall Cafe

### Wednesday, November 15

- Creamy Mushroom Chicken Soup
- Texas Style Meatloaf Sandwich
- Chicken Wellington
- Italian Sausage with Peppers
- Smoked Turkey Panini Pesto Mayo
- Assorted Slice Pizza
- Chicken Alfredo Fettucine

[Wilson Hall Cafe Menu](#)

## Chez Leon

### Wednesday, November 15

#### Lunch

- Calzone of Bacon, Cheese and Cabbage
- Marinated Vegetable Salad
- Coffee-Chocolate Coupe

### Thursday, November 16

#### Dinner

- Tortilla Soup
- Swordfish and Vegetable Kebobs
- Lemongrass Rice
- Cassata

[Chez Leon Menu](#)

Call x4598 to make your reservation.

## Search

"We gathered on the 6th floor of Wilson Hall on an August night," said Diehl. "There had been recent dust storms [near the telescope in New Mexico] but we were hoping the weather would cooperate anyway." The team used a telescope stationed at Apache Point, which can be operated from Wilson Hall. After taking long-exposure images and spectroscopy, they discovered that the galaxy was 11 billion light-years away--confirming that this was indeed a lensed galaxy. Lensing had made it 10 times brighter than it should have been.

Even more good news, the blue arc was a special type of star-forming galaxy called a "Lyman Break Galaxy." It was three times brighter than any Lyman Break Galaxy previously discovered, offering astronomers a more detailed glimpse of star formation. "The light we're seeing today left the stars in the 8 O'clock arc 11 billion years ago," said Lin, "we can view that faraway galaxy as it was when the universe was much, much younger."

--Siri Steiner

*SDSS announced the discovery of the 8 O'clock arc last week. You can read the full [press release](#) here.*



into existence the ITER Organization, which will be responsible for the construction and operation of ITER, will be signed in Paris.

Two weeks ago, Dr. Raymond L. Orbach, the DOE Under Secretary for Science and Director of the Office of Science, was at Fermilab for the signing of the DOE's contract with the Fermi Research Alliance for the operation of Fermilab. A number of us had a lunch time discussion with him, which centered on the prospects and plans for the ILC. In that conversation, Orbach pointed to ITER as a model for the ILC, for how the work of building it could be divided among the partners, and for the sort of international arrangements that would have to be made for its construction. The negotiations for the ITER International Agreement took several years to complete, but Orbach told us that the corresponding negotiations for the ILC could be shortened by following the model provided by ITER.

I, for one, will eagerly follow the progress of the ITER project, with the hope that its success does, indeed, provide a model that the ILC can emulate.

## Announcements

### International Folk Dancing

International Folk Dancing will meet Thursday, November 16 at Kuhn Barn. Dancing begins at 7:30 p.m. with teaching and children's dances earlier in the evening and request dancing later on. Newcomers are welcome and you do not need to come with a partner. The group will not meet on November 23 because of Thanksgiving, but will meet again November 30. Info at 630-584-0825 or 630-840-8194 or folkdance@fnal.

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From left: Douglas Tucker, Liz Buckley-Geer, Tom Diehl, Sahar Allam, Huan Lin, Josh Frieman (not pictured) and Jim Annis (not pictured) helped confirm the galaxy's distance.

**In the News**

### ***The Economist*** **November 2, 2006:** **Mercy Mission**

*Astronauts will be allowed to upgrade the Hubble space telescope after all*

EDWIN HUBBLE was the first astronomer to describe the expansion of the universe, in a physical formulation made in 1929 that now bears his name. On October 31st America's National Aeronautics and Space Administration (NASA) announced that it would further expand man's knowledge of the universe by allowing astronomers to repair and upgrade the telescope that is named after him.

Since its launch in 1990 the Hubble space telescope has captured beautiful images of the universe, such as the birth of stars in stellar nurseries, while conducting rigorous science, such as the recent detection of planets orbiting stars near the centre of the Milky Way. In its 16 years of operation it has found the first convincing evidence for the existence of black holes, made observations supporting the theory that the universe's expansion is accelerating and confirmed that dark matter exists.

[Read More](#)

gov.

**Weekly time sheet due early**

Due to the upcoming Thanksgiving Holiday, weekly employees will need to report their time early. Employee time sheets for the week of November 11-19 are due in Payroll by 10 a.m. on Thursday, November 16. Payday will be Wednesday, November 22.

**Bridge Club**

Bridge Club will meet every Monday from 12:00 p.m. to 1:00 p.m. in the Board Room, WH 5 SE, for friendly, informal bridge. All are welcome.

**ILC Detector Test Beam Workshop**

Registration is now open for the ILC Detector Test Beam Workshop that will take place at Fermilab January 17 to 19, 2007. The workshop will assess the current and future needs for test beams for the ILC detector R&D program, and provide input to facility managers and users, and to the World-Wide Study group for the development of a road map. You can learn more and register [here](#).

**[Upcoming Activities](#)**